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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/813,656	03/20/2001	Robert W. Heath	P123US1	2873
8791	7590	06/16/2005	EXAMINER	
BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			ODOM, CURTIS B	
			ART UNIT	PAPER NUMBER
			2634	

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/813,656

Applicant(s) ☒

HEATH ET AL.

Examiner

Curtis B. Odom

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15, 46-56 and 74-88 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 46-56 and 74-88 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 2/28/2005 have been fully considered but they are not persuasive. Applicant states that Jackson et al. (U. S Patent No. 6, 097, 704) does not disclose the claim limitation "displaying the quality of the wireless transmission". However, it is the understanding of the examiner that Jackson et al. clearly discloses displaying the quality of the wireless transmission. Jackson et al. clearly states "Both the base unit and the remote may used the receipt of such (test) sequences to determine the BER (bit error rate) and may report the BER to the remote unit for **display** to the user. The **displayed** BER information is very useful to system installers...". Thus, it would have been obvious to one of ordinary skill in the art that since the BER represents the quality of the wireless transmission that Jackson et al. anticipates this claim limitation.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-15 and 46-50 are rejected under 35 U.S.C. 102(e) as being anticipated by Jackson et al. (previously cited in Office Action 8/26/2004).

Regarding claim 1, Jackson et al. discloses a method for displaying a quality of a wireless data transmission comprising:

receiving (Fig. 1, block 22, column 12, lines 15-51) the wireless data transmission wherein the wireless data transmission originates from multiple transmit antennae;

determining (Fig. 1, blocks 18 and 22, column 15, lines 34-49) the quality of the wireless data transmission based on a quality parameter of the wireless data transmission; and

displaying (Fig. 1, block 22, column 15, lines 34-49) the quality of the wireless data transmission.

Regarding claim 2, which inherits the limitations of claim 1, Jackson et al. discloses the wireless data transmission comprises multiple streams of data and determining the quality of the wireless data transmission based on a quality parameter of the wireless data transmission comprises determining a value of the quality parameter for each of the multiple streams of data (column 15, lines 34-49).

Regarding claim 3, which inherits the limitations of claim 1, Jackson et al. discloses the wireless data transmission comprises multiple streams of data and determining the quality of the wireless data transmission based on a quality parameter of the wireless data transmission comprises determining an aggregate value of the quality parameter for the multiple streams of

data (column 15, lines 34-49), wherein an aggregate value is simply a summation of the signal measurements of the RF signals.

Regarding claim 4, which inherits the limitations of claim 2, Jackson et al. discloses the quality parameter is selected from a group consisting of a bit error rate, a packet error rate and a frame error rate (column 15, lines 34-49).

Regarding claim 5, which inherits the limitations of claim 3, Jackson et al. discloses the quality parameter is selected from a group consisting of a bit error rate, a packet error rate and a frame error rate (column 15, lines 34-49).

Regarding claim 6, which inherits the limitations of claim 2, Jackson et al. discloses the quality parameter is selected from a group consisting of a signal-to-noise ratio, a carrier-to-interference ratio and a signal-to-interference plus noise ratio (column 15, lines 34-49), wherein signal-to-noise ratio, a carrier-to-interference ratio and a signal-to-interference plus noise ratio are predetermined characteristics of the RF signal.

Regarding claim 7, which inherits the limitations of claim 3, Jackson et al. discloses the quality parameter is selected from a group consisting of a signal-to-noise ratio, a carrier-to-interference ratio and a signal-to-interference plus noise ratio (column 15, lines 34-49), wherein signal-to-noise ratio, a carrier-to-interference ratio and a signal-to-interference plus noise ratio are predetermined characteristics of the RF signal.

Regarding claim 8, which inherits the limitations of claim 2, Jackson et al. discloses the quality parameter comprises the number of cyclic redundancy check failures (column 15, lines 34-49), wherein the number of cyclic redundancy check failures is a predetermined characteristic of the RF signal.

Regarding claim 9, which inherits the limitations of claim 3, Jackson et al. discloses the quality parameter comprises the number of cyclic redundancy check failures (column 15, lines 34-49), wherein the number of cyclic redundancy check failures is a predetermined characteristic of the RF signal.

Regarding claim 10, which inherits the limitations of claim 1, Jackson et al. discloses the wireless data transmission comprises multiple streams of data and determining the quality of the wireless data transmission based on a quality parameter of the wireless data transmission comprises: determining a propagation channel for the wireless data transmission (column 7, lines 33-65); and determining a value for the quality parameter based on the propagation channel (column 15, lines 34-49).

Regarding claim 11, which inherits the limitations of claim 10, Jackson et al. discloses the quality parameter is selected from a group consisting of a bit error rate of each of the multiple streams of data, a packet error rate of each of the multiple streams of data, and a frame error rate of each of the multiple streams of data (column 15, lines 34-49).

Regarding claim 12, which inherits the limitations of claim 10, Jackson et al. discloses the quality parameter is selected from a group consisting of a bit error rate of the multiple streams of data, a packet error rate of the multiple streams of data and a frame error rate of the multiple streams of data (column 15, lines 34-49).

Regarding claim 13, which inherits the limitations of claim 10, Jackson et al. discloses the quality parameter is selected from a group consisting of a signal-to-noise ratio of each of the multiple streams of data, a carrier-to-interference ratio each of the multiple streams of data and a signal-to-interference plus noise ratio each of the multiple streams of data (column 15, lines 34-

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49), wherein signal-to-noise ratio, a carrier-to-interference ratio and a signal-to-interference plus noise ratio are predetermined characteristics of the RF signal.

Regarding claim 14, which inherits the limitations of claim 10, Jackson et al. discloses the quality parameter is selected from a group consisting of a signal-to-noise ratio of the multiple streams of data, a carrier-to-interference ratio of the multiple streams of data and a signal-to-interference plus noise ratio of the multiple streams of data (column 15, lines 34-49), wherein signal-to-noise ratio, a carrier-to-interference ratio and a signal-to-interference plus noise ratio are predetermined characteristics of the RF signal.

Regarding claim 15, which inherits the limitations of claim 10, Jackson et al. discloses the quality parameter is selected from a group consisting of a channel condition number, a delay spread, a time variance, and a frequency variance (column 15, lines 34-49), wherein channel condition number, a delay spread, a time variance, and a frequency variance are predetermined characteristics of the RF signal.

Regarding claim 46, Jackson et al. discloses an apparatus for displaying a quality of a wireless data transmission comprising:

means for receiving (Fig. 1, block 22, column 12, lines 15-51) the wireless data transmission wherein the wireless data transmission originates from multiple transmit antennae;

means for determining (Fig. 1, blocks 18 and 22, column 15, lines 34-49) the quality of the wireless data transmission based on a quality parameter of the wireless data transmission; and

means for displaying (Fig. 1, block 22, column 15, lines 34-49) the quality of the wireless data transmission.

Regarding claim 47, which inherits the limitations of claim 46, Jackson et al. discloses the wireless data transmission comprises multiple streams of data and determining the quality of the wireless data transmission based on a quality parameter of the wireless data transmission comprises means determining a value of the quality parameter for each of the multiple streams of data (column 15, lines 34-49).

Regarding claim 48, which inherits the limitations of claim 46, Jackson et al. discloses the wireless data transmission comprises multiple streams of data and determining the quality of the wireless data transmission based on a quality parameter of the wireless data transmission comprises means for determining an aggregate value of the quality parameter for the multiple streams of data (column 15, lines 34-49), wherein an aggregate value is simply a summation of the signal measurements of the RF signals.

Regarding claim 49, which inherits the limitations of claim 47, Jackson et al. discloses means for displaying the quality of the wireless transmission comprises means for displaying the value (column 15, lines 34-49).

Regarding claim 50, which inherits the limitations of claim 48, Jackson et al. discloses means for displaying the quality of the wireless transmission comprises means for displaying the aggregate value (column 15, lines 34-49).

4. Claims 76-78, 82-84, and 88 are rejected under 35 U.S.C. 102(b) as being anticipated by Todd et al. (U. S. Patent No. 6, 035, 183).

Regarding claim 76, Todd et al. discloses an apparatus comprising:
a receiver (Fig. 1, block 10, column 2, lines 48-52), to receive wireless transmission wherein the wireless transmission originates from multiple transmit antennae; and

a quality display unit (Fig. 9, block 10, column 2, line 63-column 4, line 67), responsive to if not embedded within the receiver, to determine a quality (RSSI and BER) of the received wireless data transmission based, at least in part, on an ascertained one or more, quality parameters associated with the wireless data transmission, and to provide a display (Fig. 9, block 18, column 4, lines 18-67) of such quality of the wireless data transmission.

Regarding claim 77, which inherits the limitations of claim 76, Todd et al. discloses a quality indicator processor (Fig. 9, block 92, column 3, lines 15-40), responsive to a channel estimator (Fig. 9, block 90, column 3, lines 15-40) in the receiver, to determine a quality of the received wireless data transmission.

Regarding claim 78, which inherits the limitations of claim 78, Todd et al. discloses a display, responsive to the quality indicator processor, to display the quality of the wireless data transmission (Fig. 9, block 18, column 4, lines 18-67).

Regarding claim 82, which inherits the limitations of claim 76, Todd et al. discloses two or more receive antennae through which the receiver receives the wireless transmission (column 2, lines 48-52).

Regarding claim 83, which inherits the limitations of claim 76, Todd et al. discloses the determined quality comprises a channel quality parameter (column 3, lines 15-40, RSSI) and a data quality parameter (column 3, lines 15-40, BER), the quality display unit including a first and second set of indicators (column 4, lines 18-59 and column 7, lines 16-20, display fields), wherein the first set of indicator (bar graph) to display a representation of the channel quality parameter and the second set of indicators (second bar graph, column 4, lines 60-67) to display a representation of the data quality parameter.

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Regarding claim 84, Todd et al. discloses a system comprising:

two or more antennae (Fig. 1, block 10 column 2, lines 48-52) responsive to a wireless transmission

a receiver (Fig. 1, block 10, column 2, lines 48-52), to receive wireless transmission wherein the wireless transmission originates from multiple transmit antennae; and

a quality display unit (Fig. 9, block 10, column 2, line 63-column 4, line 67), responsive to the two or more antennae, to receive a wireless transmission wherein the wireless transmission originates from multiple transmit antennae, to determine a quality (RSSI and BER) of the received wireless data transmission based, at least in part, on an ascertained one or more, quality parameters associated with the wireless data transmission; and

a display (Fig. 9, block 18, column 4, lines 18-67) responsive to the receiver, to provide a display of such quality of the wireless data transmission.

Regarding claim 88, which inherits the limitations of claim 84, Todd et al. discloses the determined quality comprises a channel quality parameter (column 3, lines 15-40, RSSI) and a data quality parameter (column 3, lines 15-40, BER), the quality display unit including a first and second set of indicators (column 4, lines 18-59 and column 7, lines 16-20, display fields), wherein the first set of indicator (bar graph) to display a representation of the channel quality parameter and the second set of indicators (second bar graph, column 4, lines 60-67) to display a representation of the data quality parameter.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 51-56, 74 and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson et al. (previously cited in Office Action 8/26/2004).

Regarding claims 51-56, which inherit the limitations of claim 49, Jackson et al. does not disclose using an analog meter or LED indicators to display the value of the quality parameter for a stream of data or multiple streams of data. However, it would have been obvious to one of ordinary skill in the art that it is well known in the art to display values using an analog meter or a plurality of analog meters or LED indicators or sets of LED indicators. The type of display used would depend on the value being measured. Thus, claims 51-56 are deemed a design choice and do not constitute patentability.

Regarding claims 74 and 75, which inherit the limitations of claims 1 and 49, Jackson et al. does not disclose receiving multiple streams of data via two or more receive antennae. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement two or more antennae in the device of Jackson et al. in order to add antenna diversity to the system of Jackson et al. Antenna diversity can improve the system

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capacity in any wireless system by reducing interference, extending range, increasing data rates, and improving quality.

6. Claims 79-81 and 85-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Todd et al. (U. S. Patent No. 6, 035, 183).

Regarding claims 79, 80, 85, and 86, Todd et al. does not specifically disclose the wireless transmission is comprised of multiple spatial streams wherein a quality value for each of the multiple spatial streams is determined and at least a subset of the determined quality values is displayed. However, Todd et al. does disclose receiving data from multiple antennae (column 2, lines 48-52) and displaying multiple quality values simultaneously (column 4, lines 60-67 and column 7, lines 1-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that since the device of Todd et al. could receive data from multiple antennae that the received data could have included multiple spatial streams. It would have also been obvious that since the device of Todd et al. could display multiple quality values that the quality values of each stream could have been displayed simultaneously. Thus, claims 79, 80, 85 and 86 do not constitute patentability.

Regarding claims 81 and 87, which inherit the limitations of claims 81 and 87, Todd et al. does not specifically disclose displaying a representation of a mathematical combination of determined quality values for each of the multiple spatial streams. However, Todd et al. does disclose receiving data from multiple antennae (column 2, lines 48-52) and displaying multiple quality values simultaneously (column 4, lines 60-67 and column 7, lines 1-20), wherein the displayed quality values are a mathematical combination (column 3, lines 15-40, averages) of determined quality values. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that since the device of Todd et al. could receive data from multiple antennae that the received data could have included multiple spatial streams. It would have also been obvious that since the device of Todd et al. could display multiple quality values that the quality values of each stream could have been displayed simultaneously. Thus, claims 81 and 87 do not constitute patentability.

art at the time the invention was made that since the device of Todd et al. could receive data from multiple antennae that the received data could have included multiple spatial streams. It would have also been obvious that since the device of Todd et al. could display multiple mathematical combinations (averages of RSSI and BER) representing determined quality values that the mathematical combination for each stream could have been displayed simultaneously. Thus, claims 81 and 87 do not constitute patentability.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cugini et al. (U. S. Patent No. 6, 389, 070), McCune, Jr. (U. S. Patent No. 6, 850, 736), and Soliman (U. S. Patent No. 5, 799, 005) all disclose measuring and displaying signal/channel quality values.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 571-272-3046. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Curtis Odom
June 9, 2005



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